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THE RETURN OF THE LOCAL BREEDING POPULATION OF STARLINGS (*Sturnus vulgaris* L.) FROM THEIR WINTERING QUARTERS TO THE AREA OF HRVATSKO ZAGORJE (NW CROATIA)

ZDRAVKO DOLENEC

Department of Zoology, Faculty of Science,
University of Zagreb, Rooseveltov trg 6, 10000 Zagreb, Croatia

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During 1977 – 1995 the return of the local migratory breeding population of the starling (*Sturnus vulgaris*) from wintering quarters in North Africa to the area of Hrvatsko Zagorje was investigated. The earliest date of return was recorded in 1992 (February 7), and the latest in 1997 (March 4). During the 19-year research period, starlings usually returned from their wintering areas in mid-February. The first appearance at nesting-boxes was recorded 13 times during that period. The period of occupancy of all the 30 nesting-boxes regularly observed differs considerably from year to year. The later the date the starlings return from their wintering area, the shorter the period between the first observation and the occupancy of the nesting-boxes.

Key words: starling, *Sturnus vulgaris*, migration, phenology, wintering area, Croatia

Dolenec, Z.: Povratak sa zimovanja čvoraka (*Sturnus vulgaris* L.) Hrvatskog Zagorja (sjeverozapadna Hrvatska). Nat. Croat., Vol. 7., No. 2, 119–124, 1998, Zagreb

Na području Hrvatskog Zagorja istraživan je povratak čvoraka sa zimovanja kao dijela regularne selidbe. Ovim radom dat je doprinos poznavanju selidbe populacije čvoraka koja obitava u sjeverozapadnom dijelu Hrvatske. Najraniji povratak čvoraka zabilježen je 1992. godine (7. veljače), a najkasniji 1979. godine (4. ožujka). Tijekom 19 godina istraživanja čvorci su se najčešće vraćali sa zimovanja u drugoj polovici veljače. U tom razdoblju njihovo prvo pojavljivanje registrirano je 13 puta. Različito je i vremensko razdoblje zauzimanja 30 škrinjica. Što je kasniji povratak čvoraka sa zimovanja na područje gniježđenja, to je kraće vremensko razdoblje zauzimanja škrinjica za gniježđenje.

Ključne riječi: čvorak, *Sturnus vulgaris*, migracija, fenologija, područje zimovanja, Hrvatska

INTRODUCTION

The starlings (*Sturnus vulgaris*) breeding in the Hrvatsko Zagorje region nest almost exclusively in old orchards, parks and on the edge of forests. They do not go deep into forests. They also easily accept nesting-boxes which we provide for breeding (DOLENEC 1984, 1986). As nesting habitats, they prefer polycultural to monocultural areas (TIAINEN J. *et al.* 1989).

In the period between 1972 and 1995 I did not record any case of the starling's wintering in the region of Hrvatsko Zagorje. However, in other parts of Europe, with a mild climate, starlings are residential birds. For example, starlings in Great Britain and Italy, as well as 70% of Belgium starlings, are residential (SCHNEIDER 1972). The birds which were ringed during this study in the region of Hrvatsko Zagorje spend the winter in Algeria, Tunisia, Morocco and Italy (IGALFFY 1952, MUŽINIĆ 1982, 1986; DOLENEC 1988, 1994). General information on the migration of European starlings is summarised by CRAMP & PERRINS (1994).

MATERIAL AND METHODS

The research on the starling's return in spring from its wintering areas took place in the period between 1977 and 1995 (Fig. 1). The author has been ringing birds in the area since 1972. The population studied used nesting-boxes made of fir and oak for nesting. The basic dimensions of the nesting-boxes were determined according to HENZE & ZIMMERMANN (1964). The height of the nesting-boxes was between 25 and 35 cm and the width was 16×16 cm. The entrance was round, 4.5 to 5 cm in diameter. The nesting-boxes were placed on old fruit trees, 3 to 4 meters above the ground. We made observations of birds entering nesting-boxes each year during the whole period of research between February 1 and April 1. The nesting-boxes were checked daily in the morning. A nesting-box was considered occupied if a male bird took it over and did not allow other male starlings to approach it. The date when the last of all the 30 regularly checked nesting-boxes was occupied was considered the last day of the period of the occupancy of the nesting-boxes. Birds were ringed with aluminium rings from the Ornithology Institute of the Croatian Academy of Sciences and Arts. From 1972 till 1994, 5030 birds, especially young starlings in the nest (88.7%) were ringed. For this study, the ringing results of other ornithologists were also used. Ringing data considered were published in »Larus« from 1952–1994 (vol. 4 – 45). The starlings from the Hrvatsko Zagorje Region belongs to the ssp. *Sturnus vulgaris vulgaris* (VAURIE 1995).

RESULTS AND DISCUSSION

Table 1 shows the periods of arrival dates of starlings from the wintering quarters, based on the daily checking of 30 nesting-boxes. Between 1977 and 1995 the earliest date of return to the nesting-box was recorded in 1992 (February 7). The

birds first to arrive were generally males. The latest dates of return, defined as the day when the last of the 30 nesting-boxes was found to be occupied by the species, were found in 1979 and 1988 (March 19). Generally the arrival period lasted for 15 days, from March 1 till March 15. The longest period was in 1980 and lasted for 32 days (February 10 – March 14). Generally the later the date of the return, the shorter the period of moving into the nesting-boxes provided. During the 19-year period of research, the birds were first observed 13 times in mid- to late February, 4 times in early to mid-February and 2 times in early to mid-March.

Immediately after a male took over a nesting-box, it started cleaning it and throwing out the nesting material from the previous year. This behaviour is regarded as a proof that these birds belong to the native breeding population and that they are not migrating through the area to Central or north-eastern Europe. Table 2 shows the recoveries of birds ringed in the study area and found later in the Hrvatsko Zagorje study area. Most of the birds were ringed as adults, while they were sitting on the eggs in the nesting-boxes (10 specimens). Altogether 12 birds were recorded immediately after their return from the wintering area and during the nesting period. Only 2 birds were recorded just during the nesting period (no. 1 and no. 4 in Tab. 2). Bird no. 5 was recovered three times during the nesting period in 1992 and 1994, during the first nesting period, and in 1993 during the second nesting period.

For an analysis of the native population's pattern of arrival from wintering areas, recoveries of starlings native to other countries but ringed in the Hrvatsko Zagorje region could be used (Table 3). Only recoveries from the period between December 1 and April 30 (the wintering period) were analysed. All starlings during this period were found in Northern Africa and Italy. The records from December and January can be considered originating from the wintering areas (12 birds), but birds recovered in February and March (8 birds) are considered as wintering or on their way to the nesting area. Most ringed birds were yearlings. Second-year starlings usually return later to the area where they were hatched. This is partly due to the fact that many second-year males do not nest. Only a small portion of second-year females actually nest and, if they do so at all, usually later in the season than older females. A female starling ringed as a nestling on April 23 1988 and found in Italy on March 12 1989 is not necessarily on its way to its nesting area. But generally, starlings fly at an average speed of 34 km/h (PERRINS 1987), so it would have taken the bird about 2 or 3 days to cross the distance of 380 km, to its native breeding area.

The data presented lead to the conclusion that the main period of the starlings' arrival from the wintering quarters in the study area takes place in the second part of February to the first part of March. According to MUŽINIĆ (1982, 1986) arrival at the nesting sites may last till early April. However, these data are not compatible with our findings. Ornithologists from other European countries presented data that correspond with the arrival dates in the study area. For example, the spring migration in Poland takes place in February and March (GROZMADZKI & KANIA 1976), whereas in Sweden starlings arrive in late February and early March (KARLSSON 1983).

Table 1. Annual periods of arrival from the wintering areas in Hrvatsko Zagorje (Mokrice), according to the time when 30 nesting-boxes were taken possession of.

Year	Arrival dates
1977	28.2. – 18.3.
1978	23.2. – 15.3.
1979	04.3. – 19.3.
1980	10.2. – 14.3.
1981	16.2. – 10.3.
1982	17.2. – 06.3.
1983	22.2. – 10.3.
1984	24.2. – 12.3.
1985	24.2. – 16.3.
1986	18.2. – 09.3.
1987	01.3. – 15.3.
1988	28.2. – 19.3.
1989	17.2. – 13.3.
1990	16.2. – 09.3.
1991	21.2. – 16.3.
1992	07.2. – 10.3.
1993	10.2. – 11.3.
1994	11.2. – 09.3.
1995	18.2. – 13.3.

Table 2. Recoveries of starlings in the region of Hrvatsko Zagorje, where they were also ringed

Number	Ring number	Date of Ringing	A	B
1	D 3738	09.6.90.	08.2.92.	–
2	D 3829	25.4.91.	11.2.92.	18.4.92.
3	D 3835	25.4.91.	11.2.92.	18.4.92.
4	D 6794	18.4.92.	14.2.94.	–
5	D 3059	29.4.90.	18.2.94.	18.4.92. 02.6.93 11.4.94.
6	HA 0527	11.4.94.	19.2.95.	23.4.95.
7	C 259282	09.5.92.	19.2.95.	30.5.95.
8	HA 0513	11.4.94.	19.2.95.	30.5.95.
9	HA 1239	13.6.94.	19.2.95.	30.5.95.
10	D 6787	18.4.92.	19.2.95.	30.5.95.
11	Z 39	15.5.93.	19.2.95.	30.5.95.
12	HA 1163	29.5.94.	19.2.95.	30.5.95.
13	C 259290	09.5.92.	19.2.95.	30.5.95.
14	HA 1164	29.5.94.	19.2.95.	30.5.95.

A – observation in February
B – observation during the nesting period

Table 3. Recoveries of starlings ringed in the Hrvatsko Zagorje region (*) outside the breeding area (December – April).

Number	Date of Ringing	Date of Recovery	Country of Recovery	Distance and Direction between the Ringing and Recovery Site
1	03.7.46.	? 01.47.	Tunisia	1128 km SSW
2	13.5.50.	15.02.51.	Algeria	1300 km SW
3	13.5.50.	15.02.51.	Algeria	1300 km SW
4	19.6.50.	25.12.51.	Italy	795 km SW
5	28.6.51.	01.01.52.	Italy	480 km SW
6	10.5.52.	07.03.53.	Algeria	1320 km SW
7	20.5.53.	28.12.53.	Morocco	2556 km WSW
8	21.5.56.	25.12.56.	Tunisia	1128 km SSW
9	11.5.57.	02.01.58.	Morocco	2160 km WSW
10	15.5.59.	12.12.60.	Tunisia	1155 km SW
11	19.5.74.	03.03.75.	Italy	423 km SW
12	17.5.75.	05.01.78.	Algeria	1465 km SW
13	15.5.82.	09.03.83.	Italy	408 km SW
14	15.5.82.	06.01.83.	Italy	908 km SW
15	15.5.82.	14.02.84.	Italy	908 km S
16	10.5.84.	06.12.84.	Italy	304 km WSW
17	09.5.85.	15.02.88.	Italy	300 km W
18	23.4.88.	12.03.89.	Italy	380 km SSW
19	14.5.88.	31.01.89.	Tunisia	1200 km SSW
20	01.6.89.	27.12.89.	Algeria	1280 km SW

(* Starlings 1 –10 were ringed by other ornithologists, starlings 11 – 20 were ringed by the author of this article.)

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SAŽETAK

Povratak sa zimovanja čvoraka (*Sturnus vulgaris* L.) Hrvatskog Zagorja (sjeverozapadna Hrvatska)

Z. Dolenec

Na području Hrvatskog Zagorja obavljena su istraživanja povratka čvoraka sa zimovanja kao dijela redovne selidbe. Od 1977. do 1995. godine obavljena su motrenja povratka u selu Mokrice. Praćen je tijek zauzimanja, odnosno naseljavanja 30 škrinjica (umjetne duplje). Od 1972. do 1994. godine prstenovano je 5030 čvoraka i to poglavito mladih ptica u gnijezdu (88.7%) rabeći prstene Zavoda za ornitologiju, HAZU, Zagreb. Rezultati istraživanja upućuju nas na zaključak, da je središnje razdoblje najintenzivnijeg povratka čvoraka zabilježene 1992. godine (7. veljače), a najkasnije 1979. godine (4. ožujka). Nadnevci prvog dana dolaska čvoraka ostalih godina nalaze se između spomenutih nadnevaka. Tijekom 19 godina istraživanja, u prvoj polovici veljače prvo pojavljivanje čvoraka zabilježio sam 4 puta, u drugoj polovici veljače 13 puta i u prvoj polovici ožujka 2 puta. Što je kasniji nadnevak dolaska ptica na mjesto gniježđenja to je kraće razdoblje zauzimanja škrinjica. Odmah po dolasku ptice pristupaju čišćenju, odnosno izbacivanju građevnih elemenata prošlogodišnjih gnijezda u škrinjicama. To nam govori da su to ptice autohtone populacije, a ne čvorci koji su na preletu prema srednjoj ili sjeveroistočnoj Europi. Izravne dokaze o ranom povratku autohtonih čvoraka Hrvatskog zagorja daje nam 14 nalaza ptica s prstenom tijekom veljače, 12 ptica je ponovo registrirano u razdoblju gniježđenja. Nalazi čvoraka s područja Hrvatskog Zagorja u drugim zemljama tijekom zimovanja ili povratka sa zimovanja potvrđuju iznijete podatke.